

Chapter 10

Environmental Health and Safety

Chapter 10

Environmental Health and Safety

Introduction to Comments and Responses for Chapter 10

Comments related to Chapter 10 generally address three main issues: (1) the technical feasibility of the proposed remedial action; (2) specific design features, such as the final location of the containment cells, the thickness of the synthetic membranes, and leachate monitoring and testing; and (3) details regarding the Cleanup Action Plan (CAP).

Feasibility of Remedial Action Plan

In response to the first group of comments, soil containment is a proven and effective approach to managing contaminated soils. Similar efforts have been undertaken throughout the region, including sites that were affected by the same source of contaminants that affect the Maury Island Gravel Mine.

The site is part of a wider area of arsenic, lead, and cadmium contamination resulting from past operation of the ASARCO smelter in Ruston. The Washington State Department of Ecology has included Maury Island and southern Vashon Island as a subsite of the Ruston/Asarco confirmed contaminated site in the Ecology Integrated Site Information System. In the Ruston area, an extensive area of existing single-family residences on urban sized lots is present in the fallout zone. The levels of arsenic, lead, and cadmium in some of these residential areas were higher than the levels encountered on the Maury Island Star Gravel Mine site. Remedial measures similar to those proposed for the mine site have been completed in the residential areas of Ruston.

In addition to the legacy left by the Ruston smelter, an older smelter in Everett has been the focus of recent studies by both Asarco and Ecology. Again, aerially deposited arsenic, cadmium, and lead are present in near-surface soils. A remedial action plan has been prepared by Ecology to segregate surficial soils with elevated concentrations of arsenic, lead, and cadmium in the

residential area. Local remedial measures have been undertaken elsewhere within the Everett Smelter impact area.

The proposed remedial action at the Maury Island site is more straightforward than the cleanup in Ruston and the proposed cleanup in Everett. In both of these other areas, remedial measures are complicated by the existing structures and improvements and the added logistical obstacle of remediation adjacent to occupied residences. On the subject site no existing improvements are in place that would restrict or hamper the proposed cleanup.

In addition, the proposed remedial measures on the subject site are not complicated by the amount of disturbance that the urban areas have experienced in the past century. The limits of arsenic, lead, and cadmium are well defined in the forested areas of the site. The location of previously disturbed topsoils is known.

Finally, the proposed remedial action at the subject site will be stricter than the remedial measures proposed in both Ruston and Everett for residential properties. In Ruston and Everett, soils with elevated arsenic, lead, and cadmium will remain in place beneath a surface mantle of clean soils in residential areas.

Detailed Design of Remedial Action

In regards to the second group of comments regarding specific design of containment cells, SEPA does not require design-level plans for the preparation of the FEIS.

Under WAC 197-11-055, Timing of the SEPA process:

- (1) Integrating SEPA and agency activities. The SEPA process shall be integrated with agency activities at the earliest possible time to ensure that planning and decisions reflect environmental values, to avoid delays later in the process, and to seek to resolve potential problems.*
- (2) Timing of review of proposals. The lead agency shall prepare its threshold determination and environmental impact statement (EIS), if required, at the earliest possible point in the planning and decision-making process, when the principal features of a proposal and its environmental impacts can be reasonably identified.*

(4) Applicant review at conceptual stage. In general, agencies should adopt procedures for environmental review and for preparation of EISs on private proposals at the conceptual stage rather than the final detailed design stage.

(a) If an agency's only action is a decision on a building permit or other license that requires detailed project plans and specifications, agencies shall provide applicants with the opportunity for environmental review under SEPA prior to requiring applicants to submit such detailed project plans and specifications.

The proposed remedial action is technically feasible. The Applicant has determined that the proposed remedial action is economically feasible. Therefore, as specified by SEPA, many design-related questions will be answered only in a general sense.

Cleanup Action Plan

The CAP will be reviewed by King County prior to any mining on the site under this proposal, and will be reviewed for consistency with the Model Toxics Control Act (MTCA), Chapter 173-340 WAC.

The Mitigation Report for Contaminated Soils and the Focused Feasibility Study for the project were included in the DEIS as Appendix C. The Mitigation Report contains a summary of the existing data, additional data requested by Ecology, and a discussion of the cleanup options. The Focused Feasibility Study discusses the cleanup options and ranks the options in a matrix to arrive at the preferred cleanup option.

The Cleanup Action Plan will need to comply with WAC 173-340-400 Cleanup Actions. This section of the MTCA details the required elements of the CAP. These requirements include an Engineering Design Report, Construction Plans and Specifications, and an operations and maintenance plan. A Compliance and Monitoring Plan would also be required in accordance with WAC 173-340-410. The Compliance Monitoring Plan would cover worker health, performance standards, and long-term monitoring to confirm that the impacted soils have been successfully segregated. The compliance plan would include the sampling and analysis plan that must meet the requirements of WAC 173-340-820. For brevity, these additional design level documents are referred to as the CAP in the following discussion of citizen comments and questions.

10.1 Primary Issues

No comments were received that specifically addressed this section.

10.2 Affected Environment

10.2.1 Background

Comment C-8.094

10 2 1 #94. This section discusses the fallout from the smelter as containing arsenic, cadmium, and lead. This is an incomplete analysis of the smelter fallout and a more thorough review of the contaminants related to the smelter should be included in the EIS, along with information regarding why these other metals, contaminants were or were not included in testing.

Vashon-Maury Island Community Council

Response

Additional information about the pattern of fallout has been added to the FEIS. For the Remedial Investigation Report for Ruston/North Tacoma (Bechtel 1992), and for the current work in the Everett Smelter area (Ecology 1999) selected soil samples were analyzed for total antimony, total copper, total mercury, and total silver in addition to total arsenic, total lead, and total cadmium. The results of the expanded testing indicated that elevated levels of the other metals corresponded with the elevated levels of arsenic, cadmium, and lead. In Ruston, the final cleanup was based on the levels of lead and arsenic. In Everett, in the peripheral areas, arsenic is used as the indicator metal. Final testing on the site would include antimony, mercury, and silver to verify the pattern found at other smelter impacted sites in western Washington. In addition, the existing groundwater monitoring data includes antimony, mercury, and silver. No elevated levels of these metals have been noted in groundwater.

10.2.2 Existing Contaminant Distribution

Contaminants other than Arsenic

Comment C-2.002

Chromium +3 and +6 are typically part of heavy metal contamination (and consistent with the site's previous exposure to Asarco), yet the applicant does not appear to consider this element and its possible forms. The DEIS should explain the results of sampling, analysis and leachate test to properly account for concentrations, mobility and fate of this high-risk metal waste, or

require such analysis if the applicant has not addressed this matter already.

Ernst, William

Response

None of the literature reviewed for this project indicated that chromium was an issue in the aerial fallout from the Ruston or the Everett smelter.

Comment O-1.364

p. 10-3 It states that lead and cadmium are present but not above the cleanup levels defined in the MTCA. One sample, identified as SS-2-S by Foster Wheeler reported a Cadmium level of 9.8 ppm which is just under the 10 ppm MTCA industrial limit. Given the fact that this sample is virtually at the limit, on what basis can Jones & Stokes claim that the entire site is below cleanup levels for cadmium? Are the lead and cadmium present above the cleanup levels for residential areas?

Ortman, David

Response

Lead and cadmium are above residential MTCA Method A (WAC 173-340-740 Table 2) cleanup values of 250 and 2.0, respectively, in some of the surficial soils.

No samples had levels of cadmium above 10 parts per million.

Comment O-1.365

This section states that groundwater levels of arsenic, lead, and cadmium are within natural levels, as shown in Table 10-2. However, this results from OBW-6 (Table 5, Appendix A, p. 19) shows Cadmium at a level of 0.003, very close to the Drinking Water Standards of 0.005. How can Cadmium levels of 0.003 be considered natural levels? What accounts for such a high level of Cadmium in the water on site? Please list all tests conducted on site for cadmium in water samples.

Ortman, David

Response

The level of cadmium detected in OBW-6 on February 19, 1999 was 0.003 milligrams per liter (mg/l); the drinking water standard (WAC 246-290-310 Table 4) is 0.005 mg/l. Subsequent samples in OBW-6 and the other wells have not detected cadmium at the detection limits of the subsequent tests. The detection limits of the subsequent tests are protective of human health based on current drinking water standards. The detection limits for the samples obtained on February 19 and May 18, 1999 are 0.002 mg/l. The detection limits for the August 31 and November 18, 1999 testing

are 0.0005 mg/l. The presence of cadmium in the initial sample from OBW-6 appears to be anomalously high and is likely a relict of drilling operations. The turbidity of the initial sample in OBW-6 was slightly elevated. It is common for initial samples from monitoring wells to be slightly elevated above actual levels in the surrounding aquifer.

Groundwater samples were obtained from OBW-6, -7, and -9 by AESI on February 19, 1999, May 18, 1999, August 31, 1999, and November 18, 1999. These test results are presented in the FEIS as an addendum to Appendix E.

Consistency between EIS and Appendices

Comment C-8.087

10 2 2 #87 Arsenic Sampling Tables in Appendix C (Tables 2 and 3) should be compared to those in Chapter 10 and Appendix B and corrected so that the tables include the same entries. Currently the tables indicate that they are providing data for the same locations on the site, but show different values. Please correct the RPD's shown in Appendix A (Work Plan) to Appendix B. It appears an incorrect formula may have been used. Appendix C shows areas of the site based on arsenic concentrations found to date in the site's soils. A discussion of heterogeneity and arsenic contamination should be included for discussion, particularly as King County Department of Public Health has compiled studies and reviewed them recently in relationship to Vashon/Maury Islands. The EIS should not be specifying the UW study as a "defining" study, when King County Department of Public Health has recently completed a comprehensive review of literature and studies, and as the UW study did not provide a evaluation of spatial distribution of arsenic, cadmium and lead distribution. Please correct this statement in the EIS.

Vashon-Maury Island Community Council

Comment

I know that small children are the most likely to be affected by arsenic contamination. Small children, domestic pets, wild animals, big children, young adults, adults, grandparents, elders, seniors -- all of us are potentially at risk from thirty to fifty years of exposure to Lone Star's dust. This EIS should also incorporate the findings from the King County Health Department's current study on Vashon-Maury Island.

Means, Shelley

Response

The tables have been reviewed. Typographical errors occurred in transferring data to the Foster Wheeler Report (Appendix C of the DEIS). This has been brought to the attention of Foster Wheeler and an Erratum to Appendix C has been included in the FEIS.

A typographical error occurred in the formula for the relative percentage difference (RPD) values presented in the Work Plan attached to Appendix B of the DEIS. The corrected RPDs for Samples 1 and 16 are presented below:

Sample Number	Surface			9-Inch Depth			18-Inch Depth		
	Arsenic	Cadmium	Lead	Arsenic	Cadmium	Lead	Arsenic	Cadmium	Lead
1	330	2	830	37	0.84	27	43	0.66	19
16	280	1.6	730	39	0.84	17	40	0.89	23
RPD	16	22	13	5	0	45	7	30	19

Most of the RPDs are within the project limit of 20. Three samples exceed the RPD limit of 20: cadmium in the surface sample and at the 18-inch depth, and lead at the 9-inch depth. The RPD values vary widely in samples that are close to the practical detection limit, such as the sample for cadmium at 18 inches. The elevated RPD for lead is expected to be due to matrix variations.

The spatial variation of arsenic at the site is presented graphically in Figures 4 through 7 of Appendix C of the DEIS.

The King County Department of Public Health sampling results will be incorporated into the CAP.

The Pathways Study was the primary document used in discussion of arsenic distribution up until the current studies. The current studies expand on the data in the Pathways study but do not replace the data. The Pathways Study focused on human exposure to arsenic hence the study focused on developed areas such as homes, schools, and playgrounds. No testing was done in forested areas for the Pathways Study.

Comment C-8.093

(part 1 of 5). #93 (in part). Appendix A (page 25) indicates baseline ground water quality monitoring should be established prior to commencement of mining, while Appendix C (Section 1 2 2) discusses that current data be used to establish this “background” level. Please determine which is correct and further,

please discuss in the final EIS how issues of spatial heterogeneity and statistical detectability of changes in groundwater quality as a function of sampling design will be accounted for.

Vashon-Maury Island Community Council

Response

The CAP for the site will address the specific methodology to be used to determine baseline groundwater quality. Background water quality determinations should be made in accordance with section 4.2.1.1 of the Implementation Guidance for the Groundwater Quality Standards (Ecology 1996).

Four of the existing five monitoring wells are positioned upgradient of the proposed and existing mine. Hence, it is reasonable to expect that adequate background water quality data can be collected. It is also reasonable to expect that the existing groundwater quality data from these five wells reflect background conditions.

Comment C-9.002

Contradictory data are presented concerning arsenic levels in the groundwater. Data show that one well is at MTCA cleanup levels. Levels of arsenic found in wells exceed DOE maximum contamination levels for groundwater by 20 to 100 times. Two wells are shown to have perched water. If the perched water becomes contaminated, it can leach to lower levels, contaminating the principal aquifer. This may have occurred by drilling test wells.

Vashon-Maury Island Community Council

Comment C-8.093

(part 1 of 5). #93 (in part). Please have AESI further explain their concerns regarding the background levels identified. The error on the chart makes the position taken in the letter confusing, particularly in light of statements made on page 10-7 that the arsenic is in a non-leachable form, and the information on page 10-3 that “groundwater levels of these contaminants at the Lone Star site and throughout Vashon/Maury Islands are also within natural levels, based on the direct testing done at the site.” Please clarify whether the data indicate the contaminants are within background levels or exceed them and provide further discussion as to the significance of AESI’s letter in Appendix E.

Vashon-Maury Island Community Council

Response

None of the groundwater quality data show that arsenic levels exceed drinking water standards (WAC 246-290-310 table 4).

There appears to be confusion between the groundwater criteria in WAC 173-200-040 and the drinking water standards in Chapter 246-290. The groundwater criteria is 0.05 micrograms per liter ($\mu\text{g/l}$); the drinking water standard is 50 $\mu\text{g/l}$. The natural background level for groundwater in Western Washington State ranges from less than 1 $\mu\text{g/l}$ to 5 $\mu\text{g/l}$ and higher. WAC 173-200-050 (3)(b)(I) states “When the natural groundwater quality for a contaminant exceeds the criterion, the enforcement limit for that contaminant shall be equal to the natural level.” The CAP would establish procedures to determine the natural background level of arsenic for this project.

The ambient levels of arsenic in the advance sand aquifer in the vicinity of Naval Submarine Base Bangor were found to be less than 1 $\mu\text{g/l}$ for the 50th percentile value (average value range) and 4 $\mu\text{g/l}$ for the 90th percentile value (upper range of the ambient water quality) (Greene 1997).

No perched water has been specifically identified within the advance sands above the mapped static water levels.

Comment O-1.367

The discussion in this section is an incomplete and biased summary of the more detailed information found in Appendix B.
Ortman, David

Response

The text of the FEIS has been modified for clarity. No bias was intended or incorporated into the FEIS. The language in the FEIS is intended to be used by lay people and decision-makers.

Groundwater Contamination

Comment O-1.372

This section also states that groundwater levels of contaminants are within natural levels. Even so, testing by AESI, the consultant’s applicant, found arsenic groundwater contamination as high as 0.004 ppm, compared to the MTCA ground cleanup level of 0.005 ppm. But this testing was done by the applicant’s consultant whose work has previously been shown to be faulty and biased. King County must carry out new groundwater levels with consultants that are not paid for by the applicant.
Ortman, David

Response

A review of the methods used by AESI indicates that the groundwater sampling is being done in accordance with locally

accepted industry standards. The prior testing by AESI on soils indicated that elevated arsenic was present in the near surface soils and AESI recommended additional sampling of the surficial soils for arsenic to further define the issue. No bias was present in the conclusions reached by AESI after their initial soil sampling.

As discussed earlier, the levels of arsenic encountered in the monitoring wells is within the existing range of groundwater quality in the advance sand aquifer in Kitsap County northwest of the site. Results of quarterly groundwater monitoring also show no groundwater contamination (addendum to Appendix E in the FEIS).

Comment C-8.093

(part 1 of 5). #93 (in part). The acceptable risk level for arsenic in drinking water is being revised downward by the EPA and comparisons of the levels found in OBW-6, 7 and 9 to ground water as well as drinking water (current and proposed) should occur.

Vashon-Maury Island Community Council

Comment C-8.093

(part 1 of 5). #93 (in part). Please provide a discussion of the evaluation that Tacoma-Pierce County Health Department has done regarding potential movement of arsenic through soils (Crecelius, et al 1985). Please provide a discussion of the levels identified in these wells in relation to current and proposed drinking water standards.

Vashon-Maury Island Community Council

Response

No decision on a revised drinking water maximum contaminant level (MCL) for arsenic is expected to be available until later this year. Hence any discussion of revised MCL for arsenic would be speculative at this time.

No evidence of arsenic movement through the soils has been identified on this site. The Applicant has proposed placing the soils with arsenic, lead, and cadmium above project action levels into an isolation cell so that movement of the contaminants of concern does not occur. Hence further evaluation of the mobility of the contaminants of concern is not warranted.

Comment C-8.093

(part 1 of 5). #93 (in part). Appendix E: AESI reported to Lone Star N W on July 7, 1999, that May 1999 water quality samples for OBW-6, 7 and 9 had high background levels for turbidity, arsenic,

and manganese. The chart provided utilizes mg/l for data and µg/l for the standard. Please correct the chart so that the data are comparable to the standard.

Vashon-Maury Island Community Council

Response

A summary chart with all of the groundwater quality data available as of February 10, 2000 is included in the FEIS as an Addendum to Appendix E. The units are uniform in the table. The table presents MTCA Method A cleanup values (WAC 173-340-720 Table A), drinking water MCLs (WAC 246-290-310 Table 4), and groundwater criteria (WAC 173-200-040 (3)).

The elevated turbidity is a property of the well construction and sampling practices.

Manganese is a common constituent of groundwater in the Puget Sound area. It is a secondary water quality standard based on aesthetics since it may cause stains on plumbing fixtures.

Comment O-1.366

If arsenic contaminants in groundwater are within natural levels (0.002-0.004 ppm in limited sampling), why is the Arsenic DOE Maximum Contaminant Level for Arsenic 0.05 ppm? (Water Quality Results, Primary Aquifer, APPENDIX E).

Ortman, David

Response

The MCL for drinking water is not an Ecology regulation, it is from WAC 246-290-310 Table 4, Group A Public Water Systems. The current MCL for arsenic has been the standard since 1942. This level is currently under review by the EPA and may be lowered to a new value in the future.

Comment I-21.021

... ground water sampling for the arsenic, from the primary aquifer - .0004 mg/l - is below the MTCA residential standard by only .001 mg/l. Isn't that close enough to warrant more testing?

Baker, Alby

Response

Quarterly groundwater monitoring is continuing. Most recent results are included in the FEIS as an addendum to Appendix E. Additional sampling would occur prior to and during site development. The final sampling plan would be part of the CAP developed for the site. King County could require that additional groundwater sampling be done following the completion of mining.

Surface Soil Contamination

Comment C-3.002

We are enclosing a copy of the first pamphlet as well as copies of Jon Roberts' original maps of the ASARCO fallout area showing concentrations of mercury in the soil and the concentrations of cadmium in the soil, vegetation, and house dust.

Quenneville, Michael and Nancy

Response

Comment noted.

Comment I-21.004

Nearby Ruston was/is a Superfund site. ... How different is Vashon/Maury?

Baker, Alby

Response

Background on contamination originating from the Ruston smelter is provided in Section 10.2 of the EIS. There are three main differences between contamination at the Maury Island Mine site and Ruston:

1. Arsenic levels were higher in Ruston. The highest level of arsenic found on the Maury Island Mine site was 477 ppm, while levels of arsenic in the near-surface soils in Ruston were up to 3,000 ppm. Ruston surrounds the smelter area and was impacted not only by aerial fallout but by the use of refining waste as fill material.
2. The proposed cleanup levels for the Maury Island mine site are more stringent than the cleanup levels that were used in the Ruston area.
3. Cleanup will be easier at the Maury Island mine site than in Ruston, where the presence of disturbed soils, existing structures, and occupied residential areas complicated remedial activities.

More details on these differences are given in Chapter 10 and throughout this Chapter of Comments and Responses.

Comment O-1.376

What explains the large variations in results between sample number 1 and 16 if sample 16 is suppose to be a field replicate of sample 1?

Ortman, David

Comment O-1.451

[Appendix B] Table 4 pp.7-8. What accounts for the wide variability in Terra Associates surface arsenic results from a field replicate (Sample No.16 (280)) with Sample No.1 (330)? Is a 15%

variance common in such testing? Is it correct to conclude that a 15% variance would put Samples No.8 above the MTCA limit?
Ortman, David

Comment O-1.469

[Appendix B, Work Plan] It states that Sample No.16 was obtained as a field duplicate of Sample No.1. If the purpose of the field duplicate is to provide a quality control review of the laboratory procedures, what conclusion can be drawn of laboratory procedures used in this instance, given the wide variability in results between Sample No.16 and Sample No.1?
Ortman, David

Comment O-1.470

[Appendix B] Why was an RPD value of 20 percent chosen for this project? Is it likely that the results generated from the 20 samples could be higher than that reported by OnSite Environmental?
Ortman, David

Response

Such variation is normal and expected.

Comment O-1.377

What explains the higher levels of arsenic from gravel pit sample 18 compared to other gravel pit sample sites?
Ortman, David

Response

Higher and lower values among the material that would be mined are expected and are due to natural variability. All samples of the material that would be mined are within natural background levels. The level of total arsenic in the surface sample from location 18 (Appendix B) is 11 ppm. The “background level” for arsenic in the Puget Sound Basin is reported to be 7 ppm (Ecology 1994). The background level is based on the 90th percentile value, which means that 10 percent of the background levels of arsenic exceed 7 ppm and 90 percent will be at or below 7 ppm. The maximum value for arsenic in the data used by Ecology to determine the 90th percentile for the Puget Sound area was 17 ppm. Hence, a value of 11 ppm can represent natural background levels.

Comment O-1.363

Neither this section nor this DEIS Chapter references the June 1999 Mitigation Report for Contaminated Soils for Northwest Aggregates prepared by Foster Wheeler Environmental. Why did Jones & Stokes ignore the soil sampling performed by Foster Wheeler? Why did Jones & Stokes fail to include Foster Wheeler’s soil contamination results of 9.8 ppm for Cadmium and 840 ppm for lead (SS-2-S), which is higher than any sample results

shown in Chapter 10?
Ortman, David

Response

The Foster Wheeler report was prepared immediately prior to the release of the DEIS and some information was not fully incorporated into the DEIS. The FEIS has been revised to incorporate all of the material in the Foster Wheeler report.

Comment I-21.018

There is no cross sectional diagram for depth variations of arsenic concentrations (though there is a table of samples showing varying concentrations at different depths).

Baker, Alby

Response

The overall elevation change across the site is on the order of 300 feet. The arsenic is concentrated in the upper 24 inches of soil. Hence, a cross-section would be difficult to create without extraordinary exaggeration that could create additional confusion. Variation in arsenic at different depths is shown in the DEIS in Figures 4 through 7 of Appendix C.

Comment I-21.020

EIS - "In general, arsenic concentration decreases with depth." What's "in general"? Are there pockets of high concentrations at depth somewhere?

Baker, Alby

Response

There are instances where the arsenic level in the sample at 9 inches is slightly higher than the surface sample. However, the arsenic levels at 18 inches and 24 inches and at greater depths are always less than the levels of arsenic found in the upper 1 foot.

Comment

10.3.3 The comparisons to ASARCO are interesting. What was the final land use target for the ASARCO (Superfund) site (the use for which cleanup values were developed)? Is residential development an option for this site (and these cleanup values)? Were ASARCO soils contained onsite or disposed of offsite?

Kuperberg, J. Michael, Ph.D.

Comment

The decision to implement the 200 ppm industrial cleanup value should include formal steps to insure that the site is restricted to industrial uses (e.g., deed restrictions). In Florida, the screening values for arsenic in soil are 0.8 ppm for residential scenarios and

3.7 ppm for industrial scenarios. These values are frequently used without regard for chemical form or bioavailability.

Kuperberg, J. Michael, Ph.D.

Comment

10.9.3 The use of different levels of protection for different levels of contamination are interesting. Once the soils exceed residential cleanup levels, what is the criteria for containment construction that changes with concentration? Is the proposed stronger level of containment sufficient to protect the most heavily contaminated soils?

Kuperberg, J. Michael, Ph.D.

Response

As stated in the DEIS, the action level for the Ruston cleanup was set at 230 ppm of arsenic. For the Proposed Action, the remedial action would employ the MTCA residential cleanup standards. Design of the containment cells would be specified in the CAP.

Comment

10.4.3 Is the chemical speciation of soil arsenic documented?

Kuperberg, J. Michael, Ph.D.

Comment

10.7.2 The chemical speciation of arsenic on site needs to be determined to confirm these conclusions.

Kuperberg, J. Michael, Ph.D.

Response

Analyses have been conducted for total arsenic, using EPA-approved test methods. No mobilization of arsenic to groundwater has been documented in all testing done to date, including recent testing by Ecology (2000). Since the impacted soils would be contained in an engineered structure, further details, such as speciation, are not needed. Speciation has been discussed by Dempsey (1991).

Comment

10.5.4 How have these recently recognized contaminated soils been managed previously? Are they spread across the island as fill? Are they managed onsite?

Kuperberg, J. Michael, Ph.D.

Comment O-1.461

[Appendix B] After warning that uncontrolled on-site grading can lead to air and water pollution, why does Terra Associates conclude that no significant migration of these materials appears to have occurred over the past 70 years? Were any soil samples taken off-site in the general direction of where contaminated dust would

be blown by wind?
Ortman, David

Response

Previous activity at the site is beyond the scope of the EIS. Under the Proposed Action and action alternatives, the contaminated materials would be isolated in containment cells. Under the No-Action Alternative, the Applicant would be required to manage soils at the site according to measures approved by Ecology.

Leachability of Arsenic

Comment O-1.373

At various places in the DEIS, arsenic is described as “has remained relatively stationary” (p. 104), “essentially trapped in firm soils” (p.104), “highly resistant to leaching” (p.10-5), “not very leachable” (p.10-6), “tightly bound to topsoils” (p. 10-7), “is in a non-leachable form” (p.10-7), “tightly bound to the soils” (p.10-7). If laboratory testing shows that arsenic is in a non-leachable form, what explains its presence in quantities in excess of MTCA standards at depths in excess of 18 inches?

Ortman, David

Comment O-1.385

10.3.2.1 p.10-5 This section states that arsenic is highly resistant to leaching. If this is the case, why do high arsenic levels show up a foot and a half below the surface? How does Jones & Stokes explain the presence of extremely high arsenic levels nine inches below the surface?

Ortman, David

Comment O-1.386

How does arsenic appear at these levels if not through leaching? Who prepared the leachability analyses reported in Table 5 of Appendix B?

Ortman, David

Comment O-1.391

Arsenic–Groundwater/Proposed Action: This section states that arsenic would not enter groundwater because arsenic is tightly bound to site topsoils and is nonleachable. Please explain this statement in light of Table 3 in Appendix C, which documents arsenic in soil samples at an 18 inch depth at levels far above MTCA Method A residential levels. If arsenic does not leach, what is it doing more than a foot and a half below the surface?

Ortman, David

Comment O-1.455

[Appendix B] p. 10 This page states that arsenic, cadmium and lead exhibit a low solubility in water. If this is the case, what accounts for finding high levels of these metals at depths of a foot

and a half below the surface?

Ortman, David

Response

Variations in the accumulations of organic matter on the forest floor; biological activity, including normal mixing of soil particles; or past cultural disturbance can mix soils within the upper 18 inches of the soil column. Arsenic levels in all samples collected from below the 18-inch depth have been below action levels.

Comment I-21.022

EIS - "Site arsenic deposits are highly resistant to leaching." Does this mean absolutely resistant? ... Does highly resistant mean 90% or 60% or what? And under what varying conditions?

Baker, Alby

Comment

Section entitled "Arsenic would not enter groundwater". Rationale (1) represents a risk-based argument. It is likely that the leachability of arsenic from site soils is not precisely zero. Is the statement based on quantitative data? If so, what is the actual value of arsenic leachability from site soils? The questions raised previously regarding the life of the containment structure are applicable here as well.

Kuperberg, J. Michael, Ph.D.

Comment

10.7.1 While the apparent long term stability of arsenic in site soils is good evidence for continued stability, it must be noted that the mine proposes to change the conditions which have stabilized the arsenic.

Kuperberg, J. Michael, Ph.D.

Comment

I found the document, in general, to be seriously lacking any attempt at adequately addressing the uncertainties associated with the assessment of human risk resulting from exposure to air or water contamination from the proposed mining activities. The document does list and address many of the public health concerns, but then draws very absolute conclusions that are not warranted by the data or analysis presented or even possible. For example, the arsenic leachability tests report arsenic leachates with concentrations of arsenic below the concentrations of greatest health concern. The authors of the EIS, however, draw conclusions about the safety that are beyond the data presented and included incorrect statements (e.g., that the arsenic was chemically bound to the soil in a form that could not be released to the ground water).

Lewtas-Jungers, Joellen, Ph.D.

Response

As documented in the DEIS and FEIS, all testing done to date has found no evidence of arsenic mobility. These include the most recent results from Ecology (see Appendix I of the FEIS). Studies performed on Maury/Vashon Island have concluded that arsenic, cadmium, and lead have remained in surface soils in forested areas (Dempsey 1991). In addition, the results of standard leach tests show that the arsenic poses minimal threat to groundwater. In any event, the soil isolation cell would be provided with both an impermeable cover and an impermeable bottom liner. Groundwater monitoring would be conducted in the area of the containment cells to assess potential arsenic migration. Final details of the liners and monitoring would be covered in the CAP. Ecology concluded that isolating contaminated soils in the containment cell would further reduce the risk of arsenic mobilization.

Table 10-1**Comment G-1.013**

Table 10-1 should identify those measurements that exceed the MTCA Method A levels for residential areas as well as for Industrial areas
Seattle Council on Airport Affairs

Response

Table 10-1 of the FEIS has been modified to show the residential area cleanup values.

Comment I-7.042

Have these data [Table 10-1] been plotted on the maps, with the spatial distribution, trends, and patterns evaluated?
Meyer, Michael

Response

Yes, the data are presented on Figures 4 through 7 in Appendix C of the DEIS.

Comment O-1.374

Table 10-1. p. 10-17. This table is not referenced. Who produced this data?
Ortman, David

Response

Table 10-1 is based on work performed for this study by Terra Associates. The text has been modified to show this reference.

Comment O-1.375

It is particularly outrageous to find that Table 10-1 has been tampered with. This same table is reproduced in Table 3, APPENDIX C by Foster Wheeler Environmental. All the data is the same, except for the arsenic values for Samples 10 and 11. Table 10-1 shows arsenic levels of 4.3 for Sample 10 when it appears that it should be 433, the highest recorded value of any sample. Sample 11 is shown as 1.9 when it appears that it should be 139. We strongly object to Jones & Stokes presenting Table 10-1 in the DEIS with altered figures that completely hide the highest arsenic values found on the site. In fact, on page 10-3 Jones & Stokes specifically states that the highest arsenic levels found on site were 330 ppm. Why has Jones & Stokes made this statement when the applicant's consultant (APPENDIX C, p. 8) stated that arsenic concentrations range up to 433 ppm?

Ortman, David

Response

The values presented in Table 10-1 are the correct values. The values for surface samples 10 and 11 in Appendix C Table 3 are typographical errors. The values presented in Table 10-1 of the DEIS have been verified with the original laboratory reports. The EIS Team has notified Foster Wheeler of this error in Appendix C, and an Erratum has been included with the FEIS.

The actual highest level measured onsite was a value of 477 ppm in sample GM-8 taken by the Applicant's consultant, AGRA.

Table 10-2

Comment O-1.378

Table 10-2 p.10-18 This table is not referenced. Who produced this data?

Ortman, David

Comment O-1.362

This section refers to Table 10-2, but this table does not include data from OBW-1, 2 or 9. Please include this information.

Ortman, David

Comment O-1.371

This section also refers to Table 10-2. There is no source or reference for the information in Table 10-2. Neither decision makers nor the public can evaluate data if Jones & Stokes refuses to disclose where the information comes from. This is just another in a long series of examples of the inadequacies of the DEIS. Please identify the source of the information found in Table 10-2.

Ortman, David

Response

Table 10-2 is from Appendix B of the DEIS and a citation has been added to the FEIS. Terra Associates prepared Appendix B and the original tabulation of this data.

OBW-1, -2, and -9 are not on this table since no soil samples from these individual explorations were analyzed for arsenic.

Comment O-1.379

This table gives Puget Sound Background levels as Arsenic (7); Cadmium (1); and Lead (24). What accounts for the extremely low test results reported from the site that are far below Puget Sound background levels?

Ortman, David

Response

The background levels of arsenic are given in Ecology (1994). The levels referred to as background are actually 90th percentile values of soil samples obtained from each of the study areas. The actual range of arsenic values measured in the Puget Sound area ranged from 1.45 to 17.17 ppm. Ecology chose to use the 90th percentile value in accordance with Ecology published statistical guidance. Thus, the value presented in Table 10.2 are better described as being within background ranges rather than below background levels.

Comment O-1.361

(repeated in part) This section (10.2.2 p.10-2) refers to Table 10-1 and Figure 10-1. There is no source or reference for the information in Table 10-1 nor is Figure 10-1 properly identified. Neither decision makers nor the public can evaluate data if Jones & Stokes refuses to disclose where the information comes from. ... Please identify the source of the information found in Table 10-1 and who prepared Figure 10-1.

Ortman, David

Response

Table 10-1 and Figure 10-1 were prepared by Terra Associates, and is now referenced in the FEIS.

Figure 10-2**Comment O-1.381**

Why are exploration pits labeled EB-X in the legend but EP-X on the map (Figure 10-2)? Is Jones & Stokes capable of producing a map that is not riddled with errors?

Ortman, David

Response This typographical error has been corrected in the FEIS.

Comment O-1.382 Why is nothing shown on this map for EB (or EP) 1, 4, 5, 6, 7, 8, 10, 12, 13, 14, 15? Why does EP-10, 29, 30, 31, 32, and 33 show up on Figure 10-3 but not on Figure 10-2?
Ortman, David

Comment O-1.380 Figure 10-2 Why is nothing shown on this map for OBW-3, 4, 5 and 8? Why does OBW 5 show up on Figure 10-3, but not on Figure 10-2?
Ortman, David

Response Figure 10-2 shows the locations where resource samples were obtained for chemical analysis. The test pits where no samples were obtained for analytical testing are omitted to reduce the amount of “clutter” on the plan.

Figure 10-3 presents the schematic layout of the isolation cell. The adjacent exploration pits are shown for reference.

Additional Testing

Comment I-21.017 Soil test for Lone Star and our own local studies are unsettlingly very different. ... Is King County prepared to do further studies- Putting the Lone Star permit process on hold till adequate studies are completed and correlated?
Baker, Alby

Comment O-1.448 [Appendix B] Table 2 p. 4. Why did the applicant’s consultant, AGRA, perform arsenic tests that did not use standard test methods? Who approved of the test methods that AGRA used?
Ortman, David

Response Soils testing by AGRA, Landau, AESI, and Terra Associates are all consistent, in that they show that the soils are contaminated and must be managed. The testing by AESI was the initial testing on the site. AESI concluded from their testing that additional testing was needed. The results of recent King County testing are also consistent with the data in the FEIS.

Comment I-21.019

If contaminants are showing up at varying depths down to aquifer levels, shouldn't there be a really detailed testing and analysis before extensive mining occurs?

Baker, Alby

Response

Arsenic, lead, and cadmium have not been identified in any soil samples obtained from below 2 feet of the ground surface. No elevated arsenic, lead, or cadmium contaminants have been identified in groundwater.

10.3 Impacts

General

Comment C-9.007

Section 10 of the DEIS has presented a series of conclusions that are inadequately supported within the context of the document: without professional endorsement, sufficient lab testing, or references to scientific theory. Many conclusions are contradicted, and some circumscribed reporting of data appears to support the observer's bias.

Vashon-Maury Island Community Council

Response

Opinion noted. The text of the FEIS has been clarified. The body of the FEIS is intended for lay persons and decision-makers.

Comment I-3.007

... DEIS does not adequately address: the disturbance of heavily contaminated soils containing arsenic and cadmium.

Pearce, Judith Wood

Response

Impacts due to arsenic and cadmium in soils are evaluated throughout Chapter 10.

Comment I-12.002

What will Lone Star do about residues of lead and cadmium from the lead smelter that originally occupied the Ruston site?

Chasan, Daniel Jack

Response

The Applicant proposes to perform a voluntary cleanup of areas to be mined in accordance with Washington State Laws. The impacted soils would be segregated and placed into lined cells to isolate the impacted soils from the environment. The details of the final cleanup action would be contained in the CAP.

Comment What is the basis for the 2-acre clearing limitation on contaminated soils? Is this based on the ability to remove and contain this area of soils in one day?

Kuperberg, J. Michael, Ph.D.

Response The 2-acre limit has been removed from the FEIS since there was no identifiable adverse impact. The FEIS states that contaminated soils should be cleared in manageable phases (see Section 10.4.3.2).

10.3.1 Would mining remobilize the existing arsenic in the site topsoils as air contamination and dust?

Comment I-4.001 (part 1 of 2) Expanded mining would re-release into the atmosphere at an accelerated rate arsenic and other toxic compounds now resting in the soils of Maury Island, endangering the health of all residents in the County.

Gylland, Barbara and Fred

Comment (2) Arsenic, present on the site, would be disturbed with the potential for airborne distribution causing a public health hazard.

Larson, Alice C., Ph.D.

Comment I'm afraid that if Lone Star makes a mistake stripping arsenic-laden soils that my two young children (and me and my wife) will be become "downwinders" and suffer health problems. Vashon-Maury Island has suffered long enough from past pollution from the Asarco smelter in Tacoma—let's let sleeping arsenic remain where it is.

Osborne, John

Comment I-11.010 Moving 200 acres of soil could reintroduce arsenic into the air and pose a significant risk to neighboring communities. The EIS must address the severity of the arsenic issue.

Parrish, Elizabeth/Rees, John

Comment High levels of arsenic have been found on the site of the proposed mining operation. Arsenic levels as high as 380 ppm, almost double the clean up standard for industrial sites, have been identified. As you are probably aware, the risk from arsenic and other toxins is highest with children, and as residential home sites, including two of my property lines, lie within 50 feet of the proposed mine, we need your assistance. Moving 200 acres of soil could reintroduce arsenic in to the air and we ask that you confirm with DDES that they are giving this the highest priority, along with

issues related to Vashon/Maury Island's water supply.
Saunders, Peter and Karen

Comment

10.5.1 In addition to the containment process, the clearing, excavation and transportation processes would expose the contaminated material to air.

Kuperberg, J. Michael, Ph.D.

Comment

10.4.4 Are the authors suggesting the roots are performing an important role in immobilizing the arsenic? What will be the effect of ground clearing on this role?

Kuperberg, J. Michael, Ph.D.

Response

A Dust Monitoring Plan would be written as part of the CAP under the agreed order with Ecology (Section 10.4.2 of the EIS). As detailed in Appendix C of the DEIS, the air sampling plan "will be designed for compliance with Puget Sound Clean Air Agency (PSCAA) regulations."

Mr. Jim Nolan, director of compliance of the PSCAA, advised the County that no enforcement actions were needed during remedial measures in Ruston. Remedial measures to date in Everett have also required no enforcement activity.

Existing dust control measures would be suitable to mitigate and control the potential for air quality exposure. Moreover, remedial action would not be a continuous operation. Remedial measures would take place at discrete time periods prior to individual mine cells being opened.

10.3.2 Would mining remobilize the existing arsenic in the site topsoils as surface water contamination?

Comment C-8.083

#83. The suggestion that without streams or other surface water on the site arsenic cannot travel off the site via surface water flows ignores the potential and actual runoff during heavy rains. All water falling on this site is not incorporated into the subsurface regime. Quantities of water runoff the site using existing roads as conduits to the beach area and then down slope into the Sound. Please provide further discussion of this issue in light of Appendix E, AESI's letter to Ron Summers.

Vashon-Maury Island Community Council

Comment G-3.035

#35. Section 10.3.2, Surface Water Contamination, states that there are "no streams or other surface water on the site." While this

may be technically true, it is equivocal, since surface runoff forms seeps that drain to Puget Sound. It may be true that arsenic is tightly bound, but it's also true that it will be disturbed by mining activity and could easily find it's way into Puget Sound. This section leaves unclear how disturbing the surface contamination would affect the flow of contaminants to Puget Sound, much less how such contamination would be permitted and mitigated

People for Puget Sound

Response

Potential surface water contamination is assessed in Section 10.3.2. Analysis of samples from areas that would produce runoff, namely roadways, found levels for arsenic, lead, and cadmium at background levels. The undisturbed second growth forest where the arsenic, cadmium, and lead are present does not generate runoff. The EIS Team was onsite during heavy rains in January and February of 1999 and observed no runoff in the forest. The CAP for the project would address the issue of erosion during remedial action and would detail provisions to manage surface water quality in areas where surface water would be present.

The Ecology study (Ecology 2000) stated that "samples of water from onsite springs met Washington State standards for Class AA (extraordinary) surface waters."

Comment C-9.003

The DEIS states there are no streams or other surface water on the site. This is contradicted by Figure 1-5, which shows the existing mine is part of a much larger drainage basin. Surface water flows either on the surface or just below it, outfalling on the nearshore. If the DEIS acknowledged surface water flows, it would be required to test the quality and quantity of flows. When surface water contacts surface pollution, it can carry it until it outfalls at the beach, evaporates, or percolates into underlying groundwater.

Vashon-Maury Island Community Council

Response

The project is located within a drainage basin defined by topography not by the actual presence or absence of an actual creek or stream or other surface water flow. The Ecology study (Ecology 2000) found that the seepage along the beach meets Washington State Standards for Class AA (extraordinary) surface waters.

10.3.3 Would arsenic be present in soils to be sold and exported from the site?

Comment G-4.003

3. Will the fill material leave Maury Island in clean condition? The plan in the DEIS to prevent shipping contaminated soils from Maury Island to the mainland seems to us to be deficient. During the scraping, what keeps contaminated soil from contaminating the earth-moving equipment, from falling back in to the mine from the edge, from being blow into the mine, from being washed into the mine by “storm events”, as the jargon for rain goes? The plan seems to gloss over these difficulties. How does the public know that the soil being moved to the mainland is uncontaminated? On our reading, the DEIS is sadly lacking in specifics on this point.

Seattle Community Council Federation

Comment I-6.004

Because this is a proposed mining use where the product of the mine would be routinely shipped off-site for economic benefit, why wouldn't the offsite shipment of arsenic-bearing overburden to an appropriately licensed and operated treatment/disposal facility be a required condition for the approval of the permit/project?

Gorski, Alan

Response

Prior to any mining activity, the Applicant would prepare a CAP that would address the segregation of soils contaminated with arsenic, lead, and cadmium. The CAP would specify protocols to verify that impacted soils had been successfully identified and removed from each mine cell prior to the export of any soil offsite.

The extent of arsenic, cadmium, and lead on the site are well defined. Hence remedial measures to control impacted soils prior to initiating operations in each cell of the proposed mine are technically feasible.

Comment G-4.006

6. SCAA might have expressed concern about leaching of the heavy-metals contamination (not only arsenic but also lead and cadmium) from potentially contaminated fill materials into the streams and aquifers in the area proposed for filling operations. SCAA did not, but we do. Again, we must express our distrust of any system that relies on the competence or good will of the regulated to ensure public safety. The Port of Seattle has a half-century track record of environmental violations at the airport. Assume as one must that Lone Star hopes to sell fill materials to customers other than the Port, who will those customers be? To a considerable extent, construction projects within the City of Seattle

in the midst of another of its great building booms (till the bubble bursts). Even if not one bucketful of Maury Island fill made it to the site of the proposed third runway the public would be at risk of arsenic cadmium, and lead poisoning from contaminated fill material delivered to building sites throughout Seattle area, and will inevitably find its way to Puget Sound. And if by chance the metals do not migrate to the water, they will remain buried till some future wave of construction pulls down today's new buildings to replace them with shinier, newer buildings in the next century—and disturbs these contaminants yet again.

Seattle Community Council Federation

Comment G-4.008

8. In our view then it is highly risky business to disturb the contamination dropped on Maury from the Ruston smelter, risky business to move soils from that contaminated site to Highline-area watersheds, risky business to move them to Seattle, risky-business to have EISs for mining that do not provide stainless-steel clad guarantees against re-contamination of other sites as the result of movement/disturbance of that contamination.

Seattle Community Council Federation

Response

Opinion noted. There is no current proposal to export soils impacted by arsenic, lead, and other metals. The CAP would address the segregation of soils containing arsenic, lead, and other metals from the mining cells prior to the export of soils from each discrete mine cell. Soils containing concentrations of those metals above designated action levels would be isolated in a containment berm.

Comment O-1.387

10.3.3.1 p.10-6 This section states that sampling has demonstrated that the sands and gravels proposed for export have only naturally occurring levels of arsenic, cadmium and lead. Please provide a specific reference for which sampling is being referred to.

Ortman, David

Response

This sampling is summarized and referenced in Table 10-2.

Comment

10.6.4 How will the containment of contaminated soils be enforced? Would there not be a motive to sell the soils?

Kuperberg, J. Michael, Ph.D.

Response

The CAP and its implementation would be enforced by King County and Ecology. There is no current proposal to export soils

impacted by arsenic, lead, and other metals. Given the potential liabilities there would appear to be little incentive to sell soils containing arsenic, lead, and other metals.

10.3.4 Would arsenic enter groundwater as a result of the proposal?

Comment I-13.001

Will a Vashon aquifer be jeopardized or affected in any way?
Kirkland, Michael

Response

No. See the analysis in the FEIS.

Comment C-8.089

10 3 4 #89 Note that the conclusions from laboratory testing regarding arsenic being in a “non-leachable” form were derived from a single sample. Please discuss why one sample was deemed sufficient, particularly in light of State of Washington Department of Ecology’s statement to the community that a minimum of 30 tests will have to be done throughout the islands to characterize the arsenic as “non-leachable” on Vashon/Maury Islands.
Vashon-Maury Island Community Council

Response

The Ecology study (Ecology 2000) states that, “The results of leachability testing reveal that arsenic in soil poses minimal threat to groundwater”. Results of leach tests reported in Appendix B of the DEIS are consistent with the testing done in the aerial fallout zone in Ruston and with the results of testing discussed in the Everett Smelter Cleanup Plan (Ecology 1999). The CAP would include additional leach testing on additional samples to obtain a statistically significant number of samples in accordance with Ecology guidelines.

Comment G-2.020

20. 10.3.4.1. If the top 18 inches of soil on the Lone Star site contain arsenic, lead or cadmium with concentrations above natural levels, how can the conclusion be drawn that the materials will not leach? Further explanation is necessary as to the testing methods and if there are alternatives.
Washington Environmental Council

Comment I-12.004

Should one believe ... the arsenic “does not easily wash out of the soil?” ... “will not wash down to the groundwater?” If the first is true, the arsenic probably will not wash down to the aquifer, but it

certainly could.

Chasan, Daniel Jack

Comment I-21.037

Isn't the 1st "12"-18" of topsoil that will be separated into the berm cells? And as these soils are bermed in various stages of the mining ... will they not be affected by rain and ground water on site?

Baker, Alby

Response

Arsenic would not "wash" down to groundwater. Soils containing elevated arsenic, lead, and other metals would be segregated and placed in a containment cell with an impermeable liner above and below the impacted soils. The final design for this facility and segregation/handling procedures would be specified in the CAP.

Comment I-6.011

With water near the surface, where the arsenic contaminated soils are the most abundant, how is the resulting arsenic mud prevented from migrating on-site once the applicant digs into the groundwater?

Gorski, Alan

Response

No excavations into groundwater would occur.

Comment I-16.002

To what degree does that increase the risk of spreading arsenic contamination into the groundwater?

Berry, Evan

Comment C-9.004

The DEIS states that arsenic is in a non-leachable form, and would not wash down to the groundwater. However, this is contradicted in Appendix C and other sources. Soil-bound arsenic is only stable within the narrow pH values tested for in the DEIS. Application of soil amendments to encourage plant growth may mobilize arsenic. Water used to control dust will then become a vehicle to transport arsenic.

Vashon-Maury Island Community Council

Comment C-9.001

The proposed mining could remobilize arsenic onsite. Clearing and grading will destroy the bonding qualities of the topsoil and eliminate water resistance, allowing surface contamination access to lower levels; removal of the sand and gravel buffer zone will reduce the distance between surface water contamination and static groundwater; water from dust suppression, of proposed mining, will contact surface contamination, become contaminated itself,

and provide a vehicle for pollution of the aquifer; consolidation of this industrial wastewater and other untreated surface runoff into unlined ponds will contaminate the aquifer; there is no known safe limit for arsenic in the environment; additional amounts in the aquifer represent an elevated risk to those persons depending upon it as their sole source drinking water.

Vashon-Maury Island Community Council

Response

No soil amendments are currently proposed to be applied to soils with elevated levels of arsenic, lead, or other metals. The soils with elevated levels of arsenic, lead, and other metals would be isolated from the environment in onsite containment cells. The final design of the cells would be specified in the CAP. The cells would be provided with a bottom and top liner and a leachate control provision. Hence, soils would have no opportunity to leach into the groundwater.

Alternative actions will be evaluated in accordance with the Model Toxics Control Act cleanup regulation, Chapter 173-340 WAC.

Appendix C of the DEIS does not contradict earlier leachability tests. In addition, the Ecology Mid-Study Fact Sheet (Ecology 2000) states that “The results of leachability testing reveal that arsenic in soil poses minimal threat to groundwater” and that “since contaminated soils will be transported and stored in containment facilities, the possibility of leaching will be further reduced.”

Comment O-1.388

10.3.4.1 p.10-7 Please identify any groundwater testing for arsenic on the site that has not been carried out by the applicant’s consultant.

Ortman, David

Response

All groundwater data used in the EIS was generated by AESI, a consultant to Glacier Northwest.

10.3.5 Would tug propeller wash stir up contaminated sediments and harm endangered fish species or other marine life?

Comment

10.8.2 To where has the deposited arsenic been diluted? This sweeping statement seems to ignore the widespread deposition of arsenic. To what depth would littoral currents move sediments? Many of these arguments depend on accurate tug positioning. How will this be enforced/documented? What steps will be taken in the event that tugs are unable to protect the shore from propwash?

Kuperberg, J. Michael, Ph.D.

Comment

Non-leachable contaminants tend to concentrate in sinks and will be released from sediment if propeller wash reaches the sediment.
St. George, Brian

Response

Testing of marine sediments at the project site (EVS Environment Consultants 2000) found arsenic and other metals below detection limits.

10.4 Adverse Impacts and Mitigation

10.4.1 Significance Criteria

No substantive comments were received that specifically address this section.

10.4.2 Measures Already Proposed by the Applicant or Required by Regulation

Containment Berm for Contaminated Soils

Comment C-8.090

(part 1 of 3) 10 4 2 #90 Please provide additional discussion of how contaminated soils will be moved to the containment structure. Discussions merely state that “soils should be transported by covered truck, rather than by conveyor or open-bed truck.” What routes will be used? Will county roads be utilized and if so, what testing protocols will follow to ensure arsenic is not deposited outside the site?

Vashon-Maury Island Community Council

Response The final details are design elements and would be contained in the CAP developed by the Applicant.

Comment I-16.003 ... the strategy to deal with arsenic polluted soils is also highly questionable. ... would you want it to be within a hundred yards of your back yard?
Berry, Evan

Response Comment noted. The arsenic, lead, and other metals are an island-wide issue. The CAP would detail the construction and management of the containment system of the impacted soils on the site.

Comment I-13.004 How can arsenic, measured in parts per million be completely isolated, or even partially isolated, among trillions and trillions of particles being moved?
Kirkland, Michael

Response The elevated arsenic, lead, and other metals occur in a predictable pattern. The CAP would specify detailed procedures and protocols that would be used to segregate the impacted soils.

Comment I-21.036 “MTCA does not consider confinement of hazardous substances to be a permanent solution”. What does this portend for Lone Star’s Berm? What Happens in the middling and long term?
Baker, Alby

Response The CAP would include engineering and institutional controls for long-term monitoring and maintenance of the containment cells.

Comment C-2.011 Lone Star is establishing and operating a RCRA TSD facility. It is imperative that the applicant document as part of a DEIS its plan and administrative measures and approvals through application to the Department of Ecology and the Environmental Protection Agency for the required permit and demonstrate Lone Star’s commitment to the indefinite management of this TSD facility.
Ernst, William

Comment G-5.013	<p>13. Where is the requirement that if any high arsenic soil is disturbed, that it be barged off the island and delivered to a landfill capable of handling hazardous material?</p> <p>Citizens Against SeaTac Expansion</p>
Comment G-5.004	<p>4. The arsenic top layer requires complete removal from the Island and treatment as extremely hazardous material.</p> <p>Citizens Against SeaTac Expansion</p>
Comment C-7.002	<p>The high arsenic top layer should be barged off the island and sent to a hazardous materials landfill.</p> <p>Brown, A.</p>
Comment	<p>10.9.6 The applicant seems to imply that this waste will fit the description of “inert and demolition waste”. Has this determination been made officially?</p> <p>Kuperberg, J. Michael, Ph.D.</p>
Response	<p>None of the site soils have been identified as RCRA waste. WAC 173-304-100 (61) and the King County Solid Waste Regulations define the impacted soils as problem wastes.</p>
Comment I-7.043	<p>The consolidation cell will be built on a slope. ... will this area not be mined? Shouldn't the final contours on the reclamation plan be updated to reflect the presence of this cell?</p> <p>Meyer, Michael</p>
Response	<p>Final design for the mine and mining contours would be integrated into the CAP.</p>
Comment C-8.088	<p>10 4 1 #88 The containment structure is not shown on most of the topographical maps or diagrams in the EIS text. Please correct the tables, diagrams, etc. for the mining site throughout the EIS and show the containment structure consistently. Please explain the width of the structure in the text of the EIS, as the length and height are the only indicators in the written text and the width of the berm should also be noted.</p> <p>Vashon-Maury Island Community Council</p>
Response	<p>The final location and size of the containment cells would be included as part of the final mine design. The location of the berm shown in Appendix C is conceptual, and is meant to show that adequate space exists onsite for the containment cell.</p>

Comment C-8.088

Section 10.4.1.1 is vague in its discussion of how the leachate will be collected from the containment cell, what monitoring program will be provided for the leachate, and who is responsible for monitoring. Please further discuss what is meant when it is stated on page 2-11 and page 10-11 that the leachate water will be collected according to MTCA. Please define whether treatment of the leachate is planned, and whether there will be direct discharge or infiltration or another option.

Vashon-Maury Island Community Council

Response

Leachate monitoring is a known and proven technique to protect groundwater quality. The details of the leachate monitoring process would be included in the CAP. The Applicant and subsequent owners of the property would be responsible for monitoring. The leachate collection system would be constructed in accordance with WAC Chapter 173-304, Minimum Functional Standards for Solid Waste Handling, and King County Solid Waste Regulations.

State law forbids the discharge of water with contaminants above specific action levels. If elevated arsenic, lead, or other metals were present in the leachate, some form of treatment would be required. If it is more economical to remove the leachate for offsite treatment, this may be the option chosen by the Applicant. Currently some of the leachate from the Vashon Landfill is collected and removed from the island for treatment. Hence collection, management, and transport of leachate is feasible.

Comment C-8.088

Section 10.4.1 fails to discuss what type of trees and or vegetation will be used for planting on top of the containment structure. Please discuss plans for vegetation of the structure.

Vashon-Maury Island Community Council

Response

Plant species used to vegetate the berm would be specified in the CAP. Shallow-rooted, drought resistant species would be required. Mitigation measures in Section 5.4.3 include revegetation with native species.

Comment C-8.088

Discuss the visual impacts of utilization of this vegetation vs. the natural vegetation in the 50 foot buffer for aesthetics.

Vashon-Maury Island Community Council

Response The berm would be visible, although partially screened by a vegetated buffer. See Chapter 11 for analysis of visual and aesthetic impacts.

Comment C-8.088 Discuss how invasive plants will be controlled in perpetuity to protect the community from the arsenic containment structure. What herbicides would be used, with what potential impacts to the aquifer and wildlife?

Vashon-Maury Island Community Council

Response No herbicides have been proposed for use on this site (see Chapter 5 for additional discussion of potential herbicide use). Methods to control invasive plants would be specified in the reclamation plan (Chapter 5).

Comment C-8.088 Figure 11-8 notes an “Existing topsoil storage berm”. Please discuss what has happened to topsoil from previous operations and whether such topsoils have previously been used for reclamation on the site, for the King County landfill or other jobs/contracts which can be identified. Please provide a testing plan to encompass those areas where the topsoils have previously been used in any manner. Please also specify that should those topsoils test above the required containment levels, that they will be removed to the containment cell.

Vashon-Maury Island Community Council

Response Definition of the condition and necessary management of the existing topsoil berm shown on Figure 11-8 would be determined in the CAP. Custodial care would be consistent with the requirements outlined in the Minimum Functional Standards for Solid Waste Handling and the King County Solid Waste Regulations.

Prior to disturbance, the existing topsoil storage berm would be tested for arsenic, lead, and other metals. There are no plans for future export of native topsoils from the site. No reclamation has occurred on the site, hence none of the prior topsoil would have been used for past site reclamation activities.

Comment C-8.088 Appendix C, Attachment A’ Table 2 ranks the alternatives for handling contaminated soils. Please provide an explanation of how

removal of the arsenic contaminated soils from the site was rated lower as a permanent solution than development of the on-site containment cell. Please provide an explanation of how off-site disposal was rated lower than the on-site containment cell for “overall protection of human health and the environment”. Please explain why an approved off-site facility is less permanent and less protective of human health than the containment cell.

Vashon-Maury Island Community Council

Response

The decision for the onsite containment is discussed in Appendix C of the DEIS. The matrix that was developed is shown in Table 2 of Appendix C in the DEIS. Offsite disposal ranked lower with respect to cost, implementability, and overall protection of human health and the environment. The lower ranking for overall protection for offsite disposal is based on the risks associated with additional transport of the materials to offsite locations. Offsite disposal would likely consist of placing the arsenic-impacted soils into containment cells at an offsite location.

Comment C-8.088

Discussion of the location of the containment cell in relation to its ability to withstand an earthquake should be included in the Final EIS. Discussion of recent seismic events in the area are critical, as is the issue of whether the berm could crack during an earthquake (what magnitude would precipitate this), and discussion of whether the slope could fail and the berm then slide. Please include same in the Final EIS.

Vashon-Maury Island Community Council

Response

The seismic conditions of Vashon-Maury Island would be incorporated into final containment cell design and construction.

Comment C-8.088

Page 10-9, Section 10.4.1.1 states that “King County will require that the applicant complete a final soils management plan to be included as part of the Final EIS”. Please discuss in the Final EIS why this was not available for public comment and why it was not published with the DEIS. Additionally, it is stated that the Final Cleanup Action Plan for onsite containment of contaminated soils is to be completed later. The Final EIS should identify what procedures have been utilized or will be utilized in development of the Final Cleanup Action Plan.

Vashon-Maury Island Community Council

Response

The final soils management plan would be included in the CAP and is not included in the FEIS. The CAP is economically and technically feasible and would become part of the final design documents. The Applicant has agreed to perform remedial action in accordance with Washington State laws. The proposed cleanup is consistent with the cleanup that has been proposed for the Everett Smelter site by Ecology. In the Everett project, a similar containment cell technique is referred to as a “consolidation facility.”

Comment I-6.002

Why shouldn't this permit be denied in light of the fact that the applicant does not propose a permanent solution for the arsenic (as defined by MTCA)?

Gorski, Alan

Comment I-6.001

Since the “bulk stabilization” is not a permanent solution as defined by MTCA, why shouldn't the applicant be required to provide a permanent solution for the arsenic in compliance with MTCA?

Gorski, Alan

Comment

I would like to formally request that the arsenic remediation plan not be approved by State of Washington DOE until the Maury Island Aquifer Study is complete, to ensure that the potential for failure of the arsenic berm and the engineering of the arsenic berm receives a full review.

Nelson, Sharon K.

Comment G-1.008

Berm problems. There seems to have been no consideration to actual cleanup of the contaminated materials. The use of a berm as a permanent solution is questionable. At some point the owner of these contaminated materials must deal with them permanently. The FEIS should show why containment of arsenic contaminated materials in a berm is better for the environment than removal and proper disposal. The proposed retention of the contaminated materials on site is inexcusable. The berm must be disposed of as part of the reclamation of the site. This should be performed incrementally every three years.

Seattle Council on Airport Affairs

Comment

How can citizens trust that the on-site entombment of the toxic topsoils is most protective of public health, safety and welfare when it is also the cheapest and least permanent of the four protective methods analyzed?

Kuperberg, Joel

Comment O-1.459

[Appendix B] p. 14 This page proposes only two options for contaminated soils, off-island removal and on-site entombment. What additional treatment to neutralize the contaminated soils are available?

Ortman, David

Response

The MTCA, in WAC 173-340-360 (9) discusses preferred alternatives and sets forth the decision process that allows the use of onsite containment.

(a) Ecology expects that treatment technologies will be used where ever practicable

Use of treatment Technologies should be emphasized at sites containing liquid wastes, areas contaminated with high concentrations of hazardous substances, highly mobile materials, and/or discrete areas of hazardous substances which lend them selves to treatment.

The use of treatment technologies is discussed in Appendix C of the DEIS. If treatment technologies were used, the impacted materials would still remain onsite and institutional controls would still be required.

(b) To minimize the need for long-term management of contaminated materials, Ecology Expects that hazardous substances will be totally destroyed, detoxified, and/or removed to concentrations below cleanup levels throughout sites containing small volumes of hazardous substances.

The impacted soils cover large portion of the site, and involve a large volume.

(c) Ecology recognizes the need to use engineering controls, such as containment, for sites or portions of sites that contain large volumes of materials with relatively low levels of hazardous substances where treatment is impractical. (emphasis added)

The use of treatment technologies is discussed in Appendix C of the DEIS. The use of onsite containment as proposed for this site was anticipated in MTCA regulations.

The proposed cleanup action is within the expectations outlined above and contained in the rest of the referenced section. In addition, the proposed containment cells consolidate the impacted materials and will facilitate new science or treatment technologies

that may become available in the future. Hence, future treatment is not precluded by the Proposed Action.

Comment I-6.003

What precedent can be cited for allowing stockpiling of toxic soils using a non-permanent solution over a sole source aquifer within 5 few miles of a known earthquake epicenter?

Gorski, Alan

Response

None of the soils encountered on the site have been determined to be dangerous wastes in accordance with Chapter 173-303 WAC, Washington State Dangerous Waste Regulations. The remedial action proposed for this site is to consolidate soils containing elevated levels of arsenic, lead, and other metals. No groundwater degradation has been documented and none is expected. The use of synthetic membranes is a common engineered solution to numerous issues including stormwater treatment ponds and landfills.

Under Chapter 173-340 WAC, and the King County Solid Waste Regulations, location requirements are waived for landfills built to hold problem wastes.

The Ecology study (Ecology 2000) states that preliminary seismic modeling predicts that materials in the cell would be stable against catastrophic gravity-driven sliding under static and post-earthquake conditions. King County could require a numerical simulation of both static and seismic conditions in regards to final slope stability and internal stability of the containment berms and leachate systems (see Chapter 4 of the FEIS for additional information on slope stability).

Comment C-8.091

(part 2 of 2) #91 (in part). Please state whether there has been a formal determination by Ecology or the EPA that this is a contaminated site and whether Ecology has formally determined that this is an “industrial site” under MTCA or whether that determination is being reviewed through the EIS process. Please specify if a determination has been made, what criteria were used to provide this determination, and provide a copy of the determination.

Vashon-Maury Island Community Council

Response

The King County team has not seen any formal determinations regarding the proposed mining site as being an industrial site.

In any event, due to the proposed use of the soils exported from the site, the remedial action will be done to MTCA Method A residential standards.

Comment I-6.012

What are the hydrogeologic, and arsenic fate and mobility calculations used to substantiate the adequacy and protectiveness of a 15-foot buffer zone? (see also 10.4.1)

Gorski, Alan

Response

The Applicant has proposed placing soils impacted by arsenic, lead and other metals into an engineered isolation cell to minimize the environmental threat these soils pose. The containment cells have been planned to be placed along the top of the site and not in the floor of the proposed mine where the 15-foot buffer is planned. Arsenic fate and mobility calculations are not needed since the impacted soils would be contained in a cell provided with both a bottom liner with a leachate collection system and a top liner to prevent the infiltration of precipitation.

Comment O-1.398

Please provide a list of all burrowing animals known to inhabit Maury Island.

Ortman, David

Comment O-1.405

Please list all burrowing animals on Maury Island capable of digging holes ... and compromising this containment cap layer.

Ortman, David

Response

The use of synthetic membranes is a common engineered solution to a wide range of construction related issues. Burrowing animals have not been identified as a significant threat to synthetic liners in western Washington. The final details of the liner and its protection against future threats would be specified in the CAP.

Comment O-1.401

p. 10-12 Please identify the types of additives that could be used to stabilize soils and any environmental impact from their use.

Ortman, David

Response

No soil additives have been proposed.

Comment O-1.402

The EIS must assess treatment alternatives that would eliminate (not concentrate) arsenic contaminated soils on Maury Island. Please revise these sections to note both long term cumulative impacts and significant adverse impacts from this project.

Ortman, David

Comment

Are state and federal entities satisfied with the proposal to dispose of contaminated soils permanently onsite? If so, what is the regulatory basis for this decision?

Kuperberg, J. Michael, Ph.D.

Response

The cleanup of the site is under the jurisdiction of Washington State laws. As part of this permit, the County would require compliance with Washington State laws in regards to the evaluation of alternatives for site cleanup. The alternatives are discussed in Appendix C of the DEIS. The issue of arsenic, lead, and other metals in topsoils is an island-wide issue and is not restricted to the proposed mining site.

Comment O-1.403

Figure 10-5 Why is the contaminated soil above industrial level being placed in the consolidated cell closest to Puget Sound?

Ortman, David

Response

The final location and configuration of the containment cells has not been determined. The locations shown in the DEIS and FEIS are schematic drawings meant only to demonstrate that adequate area exists for containment cells on the site. The final location of the cells is a design issue. King County would require a setback from the bluff that would be protective of the berm in relation to future foreseeable bluff erosion and migration.

Water Quality Related to Containment Berm

Comment O-1.399

Please describe how any contaminated water collected from the berm would be tested and (managed)

Ortman, David

Comment O-1.406

It states that any water collected from the berm would be tested and handled according to procedures outline in the MTCA. What are these procedures? How often would the leachate be tested? Where does the water draining into the perforated pipe wind up? Please provide a clear drawing of the proposed system for

collecting rainwater infiltration and potential leachate.
Ortman, David

Response

The final design of the leachate control system and contingency plans for contaminated water would be specified in the CAP. The placement of leachate collection pipes is technically and economically feasible. Leachate water would be tested as it accumulates. The final testing protocols for leachate and long-term engineering and administrative controls would be specified in the CAP. Additional information on mitigation measures is provided in Section 10.4.3.

Comment I-21.040

What happens to the excess water and possible leachate in the drain lines and manholes?
Baker, Alby

Comment 1-7.040

What will happen to the collected water? ... if not treated on site, then will it be trucked off the island by ferry? What will the safety procedures be for transporting the contaminated water?
Meyer, Michael

Response

Leachate would be tested for contaminants. The CAP would include contingency plans outlining procedures to follow in the event leachate contamination was discovered. No significant leachate is expected to develop after the upper impermeable membrane has been installed. Leachate would be expected only during initial construction of the containment cells.

Comment O-1.413

Arsenic–water/Mitigation: This section states that arsenic would not travel offsite via surface waters. Please explain the phasing of the proposed project in regards to removal of contaminated soils and the construction of the interceptor ditches and retention pond.
Ortman, David

Response

Prior to opening any discrete mining cell, the impacted soils would be segregated and handled in accordance with the CAP. A surface water interceptor ditch would be built along the uphill margin of the containment berm to minimize surface water flows through the containment cell during construction. Permanent grades around the containment cells would be designed to direct any potential surface water runoff that may develop away from the containment berms. Management of stormwater during this phase of the work would be in accordance with the CAP. Thus, the open mine cell

would not be a potential source of contamination by arsenic, lead, or other metals from surface runoff. Any interceptor ditches and ponds for the mining operation would be constructed in accordance with King County Standards and/or Surface Mining laws of the State of Washington.

Comment O-1.408

How will water collected from the berm be handled?
Ortman, David

Response

Surface water diverted from above containment cells would be treated as storm runoff in accordance with established King County regulations. Water collected from within the containment cells would be handled and tested according to protocols specified in the CAP.

Comment I-12.006

What emergency of long-term action will be taken if water quality problems arise?
Chasan, Daniel Jack

Response

The CAP would specify the details of groundwater monitoring procedures that would be followed. The nature of any response would be keyed to the actual issue that may arise.

Comment I-21.039

If the “containment cell will not be a source of leachate” - why monitor?
Baker, Alby

Response

As a safety precaution and to respond to public concerns. Following initial monitoring, the final monitoring plan would be modified based on actual performance of the site systems and final mine design.

Comment I-21.041

Monitor for how long?
Baker, Alby

Response

The monitoring period would be specified as part of the CAP. Monitoring would continue at least through completion of the mining activity.

Dust Monitoring Plan

- Comment I-2.016** What practices will be in place to keep the dust from blowing to nearby residents and causing respiratory problems?
Clark, Rose
- Comment I-13.002** Can Lone Star effectively and completely contain the relocation of arsenic via fugitive dust?
Kirkland, Michael
- Comment I-2.017** Has Seattle-King County Health Department set up a process to oversee the health of sensitive people in the community?
Clark, Rose
- Comment I-2.027** ... each place where the materials will be loaded ... who will be responsible for the twin issues of airborne dust and noise?
Clark, Rose
- Comment C-2.001** To control dust-borne arsenic, lead and cadmium, vehicles and roads will be washed. Measures and management systems to ensure proper control of these non-point sources of contaminants should be addressed in the DEIS.
Ernst, William
- Comment I-6.019** What sort of air monitoring is being proposed? Specifically, in regard to airborne arsenic? Describe in detail.
Gorski, Alan
- Comment I-13.008** ... how can Lone Star make adequate observations on dust production during the darker evening hours of operation? How will the residents of Vashon?
Kirkland, Michael
- Comment C-8.086** #86 Why is the dust monitoring plan not included in the DEIS? The plan should be a critical element of the manner in which environmental health is assured. To suggest that such a plan might be developed using wind roses for analysis is no guarantee that any such plan would be in place for this project. Please provide a complete plan for review and discussion. King County and PSAPCA should consider adding dustfall monitoring to their air quality monitoring program when it is developed, including offsite locations near the mining site and more distant locations. Please state what criteria will be used for the ambient air quality monitoring program.
Vashon-Maury Island Community Council
- Comment O-1.194** Arsenic–Air/Mitigation: This section states that in the event that single data point concentrations exceed the action limit criteria, a

contingency plan detailing additional control measures would be implemented. This is unacceptable. A DEIS must provide adequate information to decisionmakers and the public. If there are additional control measures that can be taken, they must be listed now, not deferred to the some future date.

Ortman, David

Comment

The subject EIS inadequately addresses the dust and noise problems of this proposed project and the serious threats they pose to the neighboring homeowners. This “project-friendly” report discounts the dust problem as having no serious adverse impact while mitigation measures for workmen include possible respiratory protection. Nowhere is there any mention of protection for local residents who could be 50 feet away across the fence and who could just as easily receive a liberal coat of contaminated dust every time a piece of earthmoving equipment passes. Our homesite borders the Lonestar property and I do not want an operation on the other side of my fence producing dust and dangerous contaminants in any quantity.

Andrus, Steven R.

Comment O-1.394

p. 10-9 Please explain how contaminated soils will be transferred to the containment cell without wind carrying contaminated dust off site. Please explain what will happen to vegetation that is contaminated with arsenic. Please explain how long the contaminated material will remain uncovered.

Ortman, David

Comment

10.13.4 What will be the time frame for placing temporary covers over contaminated material. Will this be a daily exercise, periodic? Who will determine the need and frequency?

Kuperberg, J. Michael, Ph.D.

Response

Air monitoring and sampling are discussed in Appendix C and Section 10.4.2 of the DEIS. As discussed on page 17 of the Mitigation Report for Contaminated soils, “The air monitoring plan will be described in detail in the CAP and will redesigned for compliance with ... [air quality] regulations.”

The dust and air quality monitoring plan would be detailed in the CAP. Air quality monitoring can operate after dusk. The project would need to comply with existing air pollution control regulations. Further details on mitigation measures for monitoring dust are given in Section 10.4.3 of the FEIS.

Comment C-8.090

(part 2 of 3) Will there be weather conditions placed on the transfer (no winds exceeding certain mph?) Section 10.4.2.1 states “temporary covers should be placed over contaminated material”. Please define temporary and provide further information regarding what constitutes an acceptable temporary cover.

Vashon-Maury Island Community Council

Comment C-8.090

(part 3 of 3) Please specify how the arsenic contaminated topsoils, when under “temporary cover”, will not be displaced by wind, burrowing animals (please identify all burrowing animals in the area), and/or children.

Vashon-Maury Island Community Council

Response

The use of temporary plastic covers to protect temporary stockpiles and to control erosion is common practice in King County. The use of temporary covers is technically and economically feasible. The EIS team is unaware of any problems with burrowing animals and temporary covers. Temporary covers are regularly inspected and can be repaired easily if damage occurs. Protection of temporary covers from wind is a common activity in the Puget Sound Region.

The remedial areas will require fencing. Remedial actions would take place in discrete cells over short periods of time. Remedial measures would not occur that would leave large areas of impacted soils exposed for more than 4 weeks. The soils found on the proposed mining site are not expected to have higher levels of arsenic, lead, or other metals than surrounding areas.

Comment O-1.407

10.4.2.1 p. 10-13 Is it correct that Taiheijo Cement Corp. has not agreed to carry out the additional dust control measures listed in this section?

Ortman, David

Response

The County team has seen no documentation that would indicate that the Applicant would not follow federal, state, and local regulations and laws regarding air pollution.

Comment I-2.031

Will they be required to put up a multi-million dollar bond for mining related disaster clean-up to this part of the Puget Sound Region?

Clark, Rose

Response

The County could require suitable bonds in accordance with established regulations. As discussed in the DEIS and the FEIS, no mining related disaster is expected to occur on this site.

Worker Safety**Comment C-3.004**

We are also deeply concerned about the worker's exposure to the fugitive dust and the workers carrying home this very contaminated dust to their families. Lone Star doesn't seem to detail any guidelines it will be using to control its workers' exposure to the most contaminated soils on the Lone Star site.

Quenneville, Michael and Nancy

Comment C-3.005

We respectfully ask that Lone Star not be able to start its proposed operations on the Maury Island site, and that King County complete its current testing of soil and water on Maury and Vashon Islands. We ask that King County develop comprehensive guidelines and procedures to minimize the health and environmental risks of the residents of Maury and Vashon Islands regarding the current and future operations of the Maury Island Lone Star Gravel Mine.

Quenneville, Michael and Nancy

Comment G-1.004

4. Measures to protect human health from heavy-metal contamination—Airborne contamination. The plans for protecting mine workers, site visitors, and Maury Island neighbors from health risks associated with heavy metal contamination on the site are insufficient in detail, the plans, such as they are, fail to provide adequate assurance that they will be complied with. The first, most obvious issue arising from the presence of heavy-metal contamination on the site is the health risk to workers who will be excavating the materials. The ten lines devoted to this subject in the DEIS are far from sufficient. It is odd that the DEIS authors have not consulted (as it seems) any governmental body charged with worker safety. Surely there are standards for working in such contaminated sites. Surely the consultants should have sought guidance from the Department of Labor & Industries, and any federal agencies claiming jurisdiction - OSHA, the mining safety organization within the U.S. Department of Interior, and perhaps the quasi-independent health agency, NIH. No provision is made for decontaminating workers. One would have expected to see a requirement for a change house with provision for handling the effluent therefrom, a requirement that workers shower and change into street clothes at the perimeter of the contamination area. Perhaps there should be provisions for monitoring for possible

contamination in workers' homes and vehicles, and occasional blood studies of workers and members of their households. It would be appropriate to emulate the sorts of measures used where contamination by radioactive materials is a risk.

Seattle Council on Airport Affairs

Comment G-4.005

5. We agree with SCAA that the provisions for worker safety at the mine (and thus for neighbor safety on Maury) are deficient, and we call on the FEIS (and DDES) to tighten up the safety measures until safety is insured - not promised, not hoped for, not assumed.

Seattle Community Council Federation

Comment

... the potential health hazards to the workers who are employed at the site must be discussed as well.

Means, Shelley

Response

WAC-173-340-810 specifically requires a health and safety plan (HASP) for any remedial actions undertaken under chapter 173-340. The HASP would be prepared along with the CAP. In addition, the CAP would detail monitoring and compliance issues with regard to airborne dust.

Comment I-7.041

Will the workers involved be given the 40-hour OSHA HAZWOPER training, have proper medical monitoring, and otherwise be trained and equipped to work on hazardous waste site, as required by law?

Meyer, Michael

Comment G-1.007

7. Soil contamination. The difficulties of avoiding re-contamination while working on a contaminated site seem to have been insufficiently considered. Workers at the mine, site visitors, Maury Island neighbors, transportation workers handling the mined materials after they leave Maury Island, and persons on-shore in areas through and to which the mined materials travel, all appear to be at risk from the heavy-metal contaminants. No provision is made for decontaminating equipment as it moves from contaminated to uncontaminated sites.

Seattle Council on Airport Affairs

Comment O-1.404

How will workers be protected from arsenic contaminated dust during the pre-mining site preparation?

Ortman, David

Response

WAC-173-340-810 specifically requires a health and safety plan for any remedial actions under taken under Chapter 173-340. The

HASP would be prepared along with the CAP. In addition, the CAP would detail monitoring and compliance issues with regard to airborne dust. No contaminated materials would be exported off the site.

Earthquake Hazards and Seismic Stability

Comment

2. The draft EIS fails to consider seismic issues, particularly in relationship to the arsenic soils containment berm. Seismic considerations should also have been included regarding impacts of the mining proposal and adjacent properties.

Huggins, Alan R.; verbatim comments from Cynthia and Kyle Cruver

Comment I-7.017

Couldn't a catastrophic failure of the containment cell (such as could be induced by a seismic event) result in a release of contaminated soil down the slope to the sensitive aquifer recharge area?

Meyer, Michael

Comment I-15.003

What is the effect of an earthquake on the arsenic berm?

Skeffington, Beverly

Comment I-15.004

Will that during a quake contaminate the aquifer?

Skeffington, Beverly

Comment G-5.012

12. What earthquake design criteria would be used for the arsenic stockpile? Would the earthquake criteria for the arsenic containment take into account the frequency that the airport/Maury Island area has been the epicenter of earthquakes including a 6.5 in the 1960s as well as the hypothesis that the east-west faultline angles under the SeaTac Airport? What will the impacts be to Puget Sound and the aquifer when an earthquake disturbs the proposed arsenic stockpile?

Citizens Against SeaTac Expansion

Comment C-7.009

Earthquake impacts—what earthquake design criteria would be used for the arsenic stockpile? Would it take into account the frequency the airport/Maury Island area has been the epicenter of earthquakes and the hypothesized east-west fault line under the SeaTac Airport?

Brown, A.

Comment I-4.001

(part 2 of 2) ... the proposed storage berm for the contaminated soil would reside on a known seismic fault.

Gylland, Barbara and Fred

- Comment I-14.001** The berm ... should this mass slide due to rain-saturated ground or earthquake, the contaminants could become airborne and carried away by wind or move to Puget Sound via rain induced erosion.
Smith, Eugene A.
- Comment I-8.004** (repeated in 4.3.4) What about seismic activity? The EIS doesn't even address this topic ... Earthquakes could spell disaster ... including disrupting the arsenic berm.
Kritzman, Ellen B.
- Comment I-6.005** (repeated in 4.3.4) What data did the DDES use to evaluate the seismic vulnerability of the site, especially in regard to concentrating arsenic-laden soils just above an aquifer?
Gorski, Alan
- Comment C-1.002** The arsenic contaminated berm will be constructed on a bluff in an active seismic area. An analysis of the impacts of seismic events, and the potential for failure must occur.
Nelson, Sharon
- Comment** We are also concerned that the proposal would merely shift arsenic contaminated soils into a containment area with no safety features to address landslide or seismic events that could compromise the containment area allowing arsenic contaminated material to enter Puget Sound.
Felleman, Fred, Ocean Advocates
- Comment** (3) Arsenic would be moved into a burm for "temporary" storage while the mining operations continue. This is an unsafe proposal in the event of an earthquake (not many years back, as a result of a 5.0 earthquake, a new fault was discovered off of Maury Island -- lending real potential to this argument).
Larson, Alice C., Ph.D.
- Comment** Visualize the fugitive dust and other hazards of the "sealed" berm of toxic topsoils in a major earthquake along the newly discovered Maury Island fault. Does this EIS recommendation accord with King County's primary duty to protect public health, safety and welfare?
Kuperberg, Joel
- Comment** I recommend that the final EIS address the uncertainties (scientifically) associated with each of the analysis and draw conclusions in a less biased manner. One of the uncertainties that should be addressed is the impact of a major earthquake in releasing toxic contaminates into the air and water.
Lewtas-Jungers, Joellen, Ph.D.

Comment O-1.393

The Soils Management Plan contains no analysis of compromising the integrity of the containment area by earthquakes. Please provide a map of all known earthquake faults that lie within 25 miles of the site. Also provide a table of all known earthquakes above 3.0 whose epicenter lies within 25 miles of the site. Please provide an analysis of the survivability of the containment area in the event of an earthquake event. Please provide an analysis of the impacts to Maury Island should the containment area be subject to a landslide.

Ortman, David

Response

The Ecology study (Ecology 2000) states that preliminary seismic modeling predicts that materials in the cell would be stable against catastrophic gravity-driven sliding under static and post-earthquake conditions. King County could require a numerical simulation of both static and seismic conditions in regards to final slope stability and internal stability of the containment berms and leachate systems (see Chapter 4 of the FEIS for additional information on slope stability).

The mapping of all epicenters regardless of their strength is not necessary to evaluate impacts. The seismicity of Puget Sound is well known and is commonly incorporated into a wide variety of design calculations and criteria.

Contaminants in Vegetation

Comment I-2.014

... the arsenic plan seems to be that the madrone forest would be mulched and mixed with the arsenic which would then become "clean dirt". Why is this contaminated soil not a Superfund cleanup site? ... Why does mining come first in this case?

Clark, Rose

Comment

10.11.1 Previous sections of the document describe a process whereby recycled organic material from the site will be mixed into the otherwise inorganic materials left from the mining process. How will these topsoils be different?

Kuperberg, J. Michael, Ph.D.

Response

The CAP would designate which soils could be used in topsoil mulching operations. No proposal to use arsenic-contaminated soils has been presented or is expected. Analysis would be needed to determine if any of the site vegetation has elevated levels of arsenic, lead, or other metals prior to the beginning of any mulch operations.

10.4.3 Remaining Adverse Impacts and Additional Measures

Comment I-12.007

What happens if someone makes a mistake? ... Fifteen feet of porous soil does not provide much leeway. Are there any contingency plans?

Chasan, Daniel Jack

Response

The CAP would specify site remedial action and administrative/engineering controls. These would include emergency response and contingency plans to address issues that may arise.

Comment I-4.010

... the County becomes a party to any claims which may be filed for health reasons, and may be incurring future costs associated with the maintenance and/or clean-up of environmental hazards resulting from the operation.

Gylland, Barbara and Fred

Response

Comment noted.

Prevention of Arsenic Contaminating Aquifers

Comment G-5.017

17. Where are the mitigation clauses that would force the mining corporation to provide water in perpetuity to Vashon and Maury Island residents should the mining contaminate the sole source aquifer?

Citizens Against SeaTac Expansion

Response

The remedial action for arsenic, lead, and other metals would be performed in accordance with state laws. Groundwater monitoring would occur throughout the life of the project. Groundwater flow patterns do not direct groundwater from the site to any existing or probable drinking water wells, hence the Proposed Action would not contaminate any existing wells. Additional measures to reduce the risk of failure of the containment cell and liner system are included in Section 10.4.3 of the FEIS.

Comment C-8.022

(repeated in 2.2.3, 3.4.2, 4.3.2, and 10.3.4). Access roads to the site should be paved to prevent dust. Will a washing system for trucks be required, and if so, what requirements will the system

have? Where will water be obtained? How will leachate be handled? Provide specifications for the wash down system and discuss monitoring of toxics. Will a monitoring well be placed near the wash down system, and how frequently will monitoring occur? Will the water requirements of this system involve truck traffic? If so, reflect this additional issue.

Vashon-Maury Island Community Council

Response The CAP would specify the details on truck/equipment wash down and decontamination requirements, if needed.

Comment I-12.005 Will anyone monitor water quality?
Chasan, Daniel Jack

Response Water quality monitoring will continue through the life of the project.

Additional Suggestions for the Containment Berm

Comment G-2.021 21. Further mitigation should be required in the form of bonds posted to sufficiently cover any failures of the arsenic on-site disposal facility. Lone Star will need to pay for any remedial actions required.
Washington Environmental Council

Response The County could require bonding under existing regulatory requirements.

Comment 10.9.5 When will the decision be made concerning native vs. non-native plants on the berm?
Kuperberg, J. Michael, Ph.D.

Response Composition of the vegetation planted in the containment berm would be specified in the CAP. Mitigation measures in Chapter 5 include revegetation with native plant species.

Product Sampling

Comment C-7.010 Why wasn't the abysmal environmental record of the company officers and corporation considered and mitigation, such as

bonds/insurance recommended? Why are there no provisions for an outside organization such as the Coast Guard to check barges for contamination?

Brown, A.

Comment G-5.014

14. Why are there no provisions for an outside organization such as the Coast Guard to regularly check barge wall/bottoms for contamination?

Citizens Against SeaTac Expansion

Comment G-1.015

15. Excavated materials should be examined by sampling every half acre of new area excavated, or at least every three days, which ever is more rigorous.

Seattle Council on Airport Affairs

Response

Opinion noted regarding Glacier Northwest. Barges would be subject to all existing Coast Guard regulations. Details on the final sampling plan would be determined in the course of the Agreed Order with Ecology and would be contained in the CAP.

10.5 Cumulative Impacts

Comment C-9.005

The DEIS statement that soils can be managed to avoid significant impacts is contradicted in the DEIS. Contaminated site soils will always remain a public hazard. Confinement is not a long-term solution. How the environment will react to material stacked on an already unstable slope, in a seismically-active area, seems unpredictable.

Vashon-Maury Island Community Council

Response

The use of onsite containment would be in accordance with Washington State laws. The expectations of Ecology were summarized earlier in this response document. The County would require that the final slopes be stable. Seismic issues were discussed earlier in this response document.

10.6 Significant Unavoidable Adverse Impacts

Comment O-1.409

10.5 and 10.6 p.10-13 These sections state that there would be no cumulative impacts to environmental health and human safety and that there are no significant unavoidable adverse impacts. This is

incorrect. The proposed project would create a highly contaminated concentrated arsenic site on Maury Island with no remediation or reclamation proposed.

Ortman, David

Response

The site would have a CAP prepared in accordance with state laws. The use of onsite containment facilities is allowed under MTCA.

10.7 Citations

10.7.1 Printed References

AESI. See Associated Earth Sciences, Inc.

Associated Earth Sciences, Inc. 2000. Technical Memorandum. Prepared for Lone Star Northwest, Inc. January 5.

Bechtel Environmental, Inc. 1992. Feasibility Study Report Ruston-North Tacoma. Submitted to US EPA Region X Superfund Branch.

Dempsey, James E, 1991. Fate of Arsenic and Cadmium in Forest Soils Downwind from the Tacoma Copper Smelter. M.S. Thesis, University of Washington. Seattle, WA.

Ecology. See "Washington Department of Ecology".

EVS Environment Consultants, Inc. 2000. Nearshore impact assessment. Maury Island Gravel Mine impact study. (EVS project no. 21527-02.) EVS Environment Consultants. Seattle, WA. Prepared for Pacific Groundwater Group. Seattle, WA.

Greene, Karen E., 1997. Ambient Quality of Groundwater in the Vicinity of Naval Submarine base, Bangor, Kitsap County, Washington, 1995. (USGS Water Resources Investigations Report No. 96-4309).

Washington Department of Ecology. 1994. Natural Background Soil Metals Concentrations in Washington State. (Publication No. 94-116.)

Washington Department of Ecology. 1996. Implementation Guidance for the Groundwater Quality Standards. (Publication No. 96-02.)

Washington Department of Ecology. 1999. Integrated Final Cleanup Plan and Final Environmental Impact Statement for the Upland Area, Everett Smelter Site, Everett, Washington. Volumes I through IV. November.

Washington Department of Ecology. 2000. Maury Island Gravel Mining Impact Studies, Mid-Study Fact Sheet. January. (Publication No. 00-10-007.) Washington Department of Ecology. Olympia, WA.

10.7.2 Additional References Cited in Comments

See individual comment letters (Volumes 5 and 6) for additional references cited in comments.